# Control Electronics Optotune-DSD

Optotune-DSD (SCAPS DSD-2-O) is an FPGA-based digital controller which is used for the control of the EL-10-42-OF lens module. The board is particularly designed and optimized for OEM-integration in 3D laser marking systems. The main features are:

- Pulse-width modulation (PWM) based lens control
- Automatic tuning for the lens
- Lens error detection
- Tracking delay of ~ 1.5 ms
- Heater control unit
- XY2-100 and bi-directional XY-SCAPS interface
- Marking speed of 6000 mm/s for a 45-degree hatching job
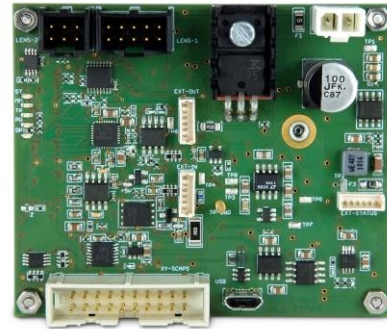
Main specifications

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Dimension total (with connectors)	80 x 67 x 40	mm
Dimension base plate (with mounting holes)	80 x 67	mm
Weight	175	g
Main DSD power supply	15 -24	V
Max power output	15	W
Max current output	1	A
Max total power consumption	30	W
Response time 80% jump length 20% jump length	8 4.5	ms
Tracking delay time	~ 1.5	ms

Description and Features

DSD-2-O

- Compact format
- XY2-100 electrical interface to control board - protocols XY2-100 or XY-SCAPS
- One lens can be connected
- Micro-USB connector for lens calibration
- Low power consumption
- 5 lens status outputs
- 5 extension inputs
- 5 extension outputs
- Heater circuit for controlling the lens temperature

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Response time measurement

The response of EL-10-42 lens controlled with Optotune-DSD board for different jump lengths (20% for top two plots and 80% for bottom two plots). The optical feedback signal is shown in black curves. The cyan trace shows the applied voltage at the input of Optotune-DSD control board. Both falling and rising edge show a very similar response time.
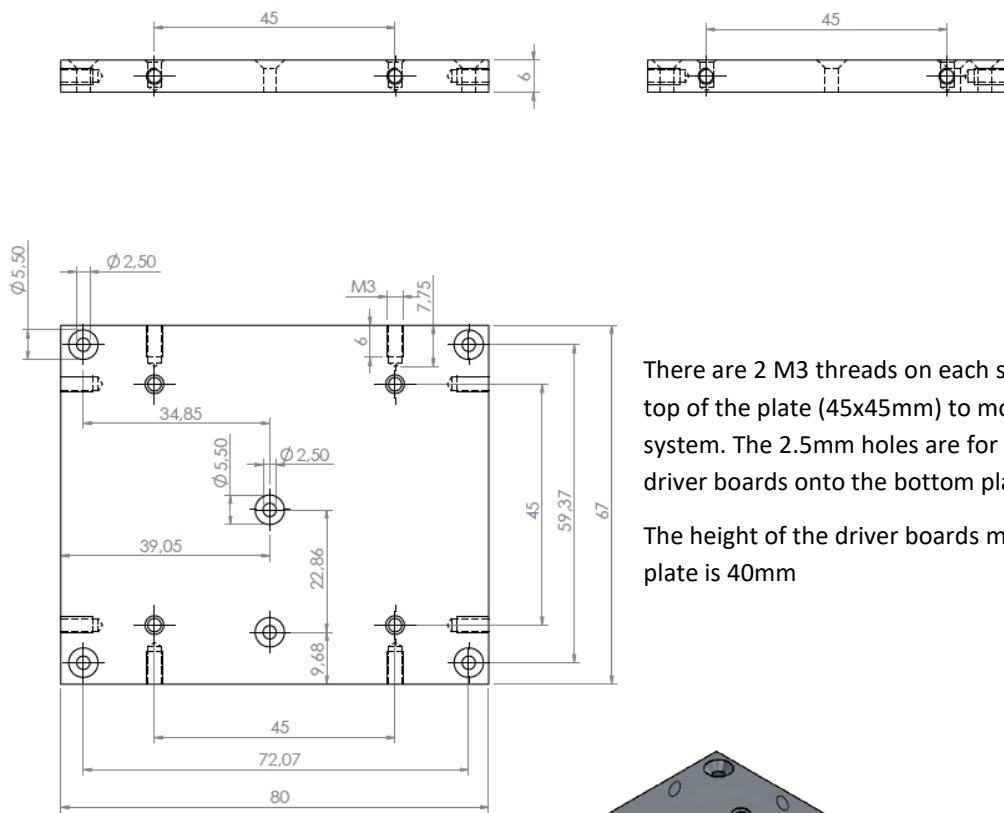
20% jump length
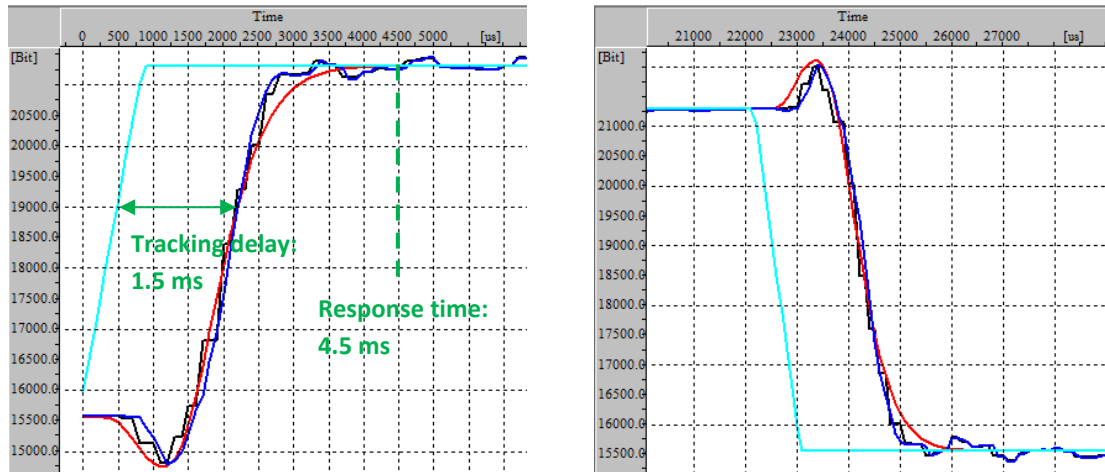
80% jump length
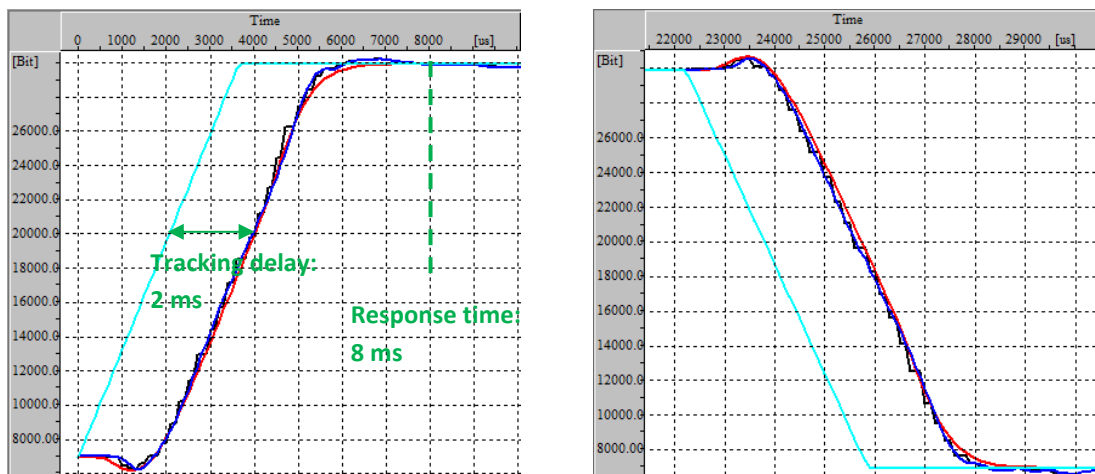
Bottom plate drawing for mounting

There are 2 M3 threads on each side and 4 M3 threads on top of the plate (45x45mm) to mount the plate to a laser system. The 2.5mm holes are for the mounting of the driver boards onto the bottom plate.

The height of the driver boards mounted on this plate is 40mm